A Study of Service Quality and Important Features of Property Websites in Indonesia

Achmad Nizar Hidayanto
Faculty of Computer Science, Universitas Indonesia
nizar@cs.ui.ac.id

Widianto Muttaqien Mukhodim
Faculty of Computer Science, Universitas Indonesia
widianto@mukhodim.com

Frisca, M. Kom
Faculty of Computer Science, Universitas Indonesia
mail.frisca@gmail.com

Kasiyah M. Junus
Faculty of Computer Science, Universitas Indonesia
kasiyah@cs.ui.ac.id

Abstract

The purpose of this research is to analyze the service quality of property websites in Indonesia in order to help website owners in evaluating their websites. The service quality of the websites is measured by adapting the SERVQUAL method which measures the gap between visitor's expectation and satisfaction. SERVQUAL in this study was constructed by adapting Web Quality Factors. In addition, considering the unique condition of Indonesia and the various technological advancements, we aim to formulate important features of property websites in Indonesia by asking the respondents to rate the importance of each feature. We circulated questionnaires to property exhibition events in Jakarta and received 101 valid questionnaires from 204 respondents. The results showed that respondents considered the service quality of the websites to still be under their expectations in all SERVQUAL dimensions which include reliability, assurance, tangibility, empathy, and responsiveness. Furthermore, we successfully identified significant features of property websites and extracted important characteristics for developing countries' context. Some of which are currently unavailable in the Indonesian property information provider websites.

Keywords: E-commerce, service quality, SERVQUAL, reliability, assurance, tangibility, empathy, responsiveness, property website, property website features, Indonesia, developing country

Introduction

The number of Internet users in Indonesia is increasing each year. Based on data released by Internet World Stats, the number of Internet users in 2000 was two million users and has since risen to 30 million users in 2010. This growth rate is likely to increase further as the number of Internet users in Indonesia is only about 12.3% of the total population. A drastically increasing number of Internet users in Indonesia has been enhanced by the growth of mobile phones, which are cheaper than personal computers, thus enabling its users to access the Internet easily. Approximately 85 million telecom subscribers in Indonesia have a mobile phone with GPRS enabled.

Along with the growth of the Internet, e-commerce websites as a place for buying, selling or exchanging products, services, and information via computer networks, including the Internet (Chaffey, 2007; Hidayanto et al., 2012) are also growing significantly. Particularly in Indonesia, starting in 1995, hundreds of e-commerce companies were established, such as online bookstores sanur.com, ekuator.com, and travel agents like indo.com. Despite the fact that many of these e-commerce companies have dissipated, some of them still exist.

There are several key success factors of e-commerce websites that are needed in order to maintain themselves in the competition. The researchers provided views from different angles related to the success of e-commerce. Jennex et al. (2004) for example, looked at the organizational aspect and found that workers' skills, client interface and technical infrastructure were the most important factors to the success of e-commerce. More attention was widely shared by researchers for the importance of website quality as a determinant of e-commerce success. Liu and Arnett (2000) found that information, service quality, system use, playfulness, and system design quality were critical factors of e-commerce success. Hernández, Jiménez, and Martín (2009) also found that accessibility, navigability and information quality were determinants of e-commerce success. The same was found by Bai et al. (2008) and Chang and Chen (2009) which showed the importance of the quality of the website to the success of e-commerce.

The above studies confirmed that the service system and information quality, as that outlined by DeLone and McLean (2003) can also be applied as important factors that determine the success of e-commerce. Taking into account the importance of the quality of service as a success factor of e-commerce, it is important to measure the quality of these websites. Many researchers have proposed some models to measure the quality of websites such as the work of Barnes and Vidgen (2000) and Loiacono et al. (2002). Mostaghel (2006) has researched the service quality of Internet sites, observing the service quality from the point of view of the Internet users in Iran. The subjects used in this study were the site cloob.com visitors, a cyberspace community site in Iran. The results from this study were compared with similar studies in the United States, performed by Iwaarden et al. (2003). Ease in navigating the site, instant access, and good searching systems appear in the top 10 rankings of Iran and the United States visitor perceptions, but the rest is different. These proposed frameworks mostly focused either in developing a framework for measuring the quality or the service quality of the websites. This study contributes in the development of the e-commerce service quality measurement framework by mapping the quality website aspects to the perspective of service quality SERVQUAL developed by Parasuraman et al. (1988). In addition, taking into account the importance of the quality of information in determining the success of e-commerce, this research also aims to formulate important features required by the user, which basically reflect the user's information needs.

To achieve this goal, we chose to assess the e-commerce websites in the field of property. The growth of the property market in Indonesia in 2012 is predicted to improve in

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

line with the economic growth[1]. This means that there is always demand for property information. Bardhan et al. (2000) stated that the Internet can provide complex information about property better than any other media. Moreover, the Internet also can shorten the cycle and cost of transactions in real estate (Nedelman, 1999).

Currently, there are several e-commerce sites that provide property information in Indonesia. However, these sites commonly share similar features and none of them offer any additional advantages. The differences of these sites are mostly only in terms of appearance, not in their functionalities. On the contrary, similar websites abroad such as trulia.com, offers a lot of information and functionality such as the location of nearby schools, interaction between users, and even utilize the GPS feature on a mobile phone to guide seekers to the property location. Thus, there is an opportunity for improvement in the information quality of these property information provider websites in Indonesia.

Despite making innovative functionalities, Indonesia is a unique country as its infrastructure of information technology condition is still limited in its bandwidth capacity. This situation could influence the suitable features of e-commerce sites in Indonesia. Considering some of the aspects we have explained, this research aims to contribute in the following:

- Develop a framework for measuring service quality of e-commerce websites by mapping website quality aspects into SERVQUAL dimensions;
- Investigate the characteristics of property information provider websites in Indonesia, particularly their service quality, to determine the level of satisfaction and expectations of users of these sites, and their implications;
- Formulate ideal requirements of property information provider websites, particularly their information-related features.

It is expected that we can contribute to help the developers of e-commerce property information sites in Indonesia in gaining insight about the visitors' characteristics of these particular sites, including their satisfaction and expectations as well. In addition, the results of this study can also be used as a benchmark basis in formulating strategies for developing property websites in Indonesia. In the broader context, the results of this study are expected to provide an insight of the service quality and requirements of property websites in other developing countries.

The rest of the paper is organized as follows. First we discuss some theoretical background underlying this study. Next we outline our methodology which is comprised of a research model, a development instrument and a data collection procedure. Next we present the results of our study both for evaluating service quality and formulating important features of property websites in Indonesia. Then we discuss the key findings of our study and their impacts. We draw our conclusion in our study in Section six. Finally, we present the limitations of our study in the last section.

Literature Review

Website Quality

Basically, a website is an informational product. As a product, its quality will certainly provide a significant impact to its customers, such as the customers' satisfaction, the intention of purchase, and the customers' loyalty. One of the concepts that could be applied related to the product quality is Total Quality Management (TQM), where the concept of quality includes (Dragulanescu and Niculescu, 2000):

1. Quality is the totality of characteristics of a product, particularly regarding its ability to satisfy stated and implied needs and requirements.
2. Quality is defined by measuring the satisfaction of the customers/users.

[1] http://properti.kompas.com/read/2011/01/10/03352673/Pasar.Properti.2011.Bakal.Bergairah

3. Quality concerns the compliance of the product to the specifications, to the adequacy of its usage, as well as to maintain its attributes aiming for excellence at a competitive price
4. Total Quality Management involves commitment of the managers and employees towards continuous improvement, which is aimed to meet the customers'/users' satisfaction, in all the phases of a product's life cycle and in all sectors of the company.
5. Quality is related to a collection of powerful concepts, tools, methods and techniques. They are all applicable in every aspect of the business, as a very productive and profitable approach to business.

Related to the website quality, there are various research aims to define the attributes of the website quality and their impacts. Kim and Stoel (2004) stated that website quality factors that affected the customers' satisfaction are the website's appearance, entertainment, informational fit-to-task, transaction capability, response time and trust. Bai et al. (2008) measured the website quality through two factors: usability and functionality. Wells et al. (2011) measured the website quality by using variables such as visual appeal, download delay, security, and navigability. In addition, research on the website quality also adopted the success of information systems theory from DeLone and McLean (1992, 2003), as performed by Kuan et al. (2008), Lee and Kozar (2006), Lin (2010), Webb and Webb (2004). Some researchers have added other factors, such as vendor-specific quality (Lee and Kozar, 2006) and attractiveness (Lin, 2010).

Cox and Dale (2002) also developed a conceptual model to assess the website quality, which is expected to give a significant result for the customers' satisfaction in the end. That conceptual model includes some key quality factors which consist of four parts: ease of use, customer confidence, online resources, and relationship service. Each part is made up of some subparts that are described as follows:

- Ease of use
  This part describes the website's ease of use by visitors. It consists of three parts: clarity of purpose, design, and communications. The website should be able to describe the purpose of its function clearly, whether for displaying the information only or for performing the transaction also. The information should be organized clearly, instructions should be available to guide the visitors in order to not confuse them. Moreover, the website should be able to describe the company's image, so that visitors can easily remember and identify it. Another point to be addressed is that the website design should avoid complexity, thus avoiding confusing the visitor and making them leave the website.
- Customer confidence
  E-commerce websites should provide a sense of comfort and safety for the visitors. Therefore, if the trust grows the desire to use the website will increase. There are seven sub sections in the categories of customer confidence, they are order confirmation, reliability, feedback, frequently asked questions (FAQ), accessibility, and speed.
- Online resources
  A website provides everything that is related to a product or information, ranging from the availability and variety of products, a review of a product, payment systems, and so on.
- Relationship services
  In a business, the customer is the king. The same case is true with businesses online, the customer is someone who needs to be treated with respect and cared for. It would be an advantage if there are special incentives or reward programs for the customers.

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

Website Service Quality

Customer satisfaction is one of the goals that every company wants to reach. According to Kotler (2002), satisfaction is determined by the pleased or displeased feelings of someone after comparing the resulting perception or impression of the performance (or outcome) of a product with their previous expectations. This means that the performance could be under their expectations, which means the customers are not satisfied, or the performance is equal to or above the expectations of the customers, which means the customers are satisfied.

Expectations can be formed from various aspects, such as viewing a product, referrals from friends, or sales of these products. For example in the property brochures, usually there is information about public facilities which are near to the site. But in reality, the location of that public facility is not as close as it is shown. That could lead to the disappointment of the readers and create a bad image for the company. According to Kotler (2002), there are four devices to measure the customer satisfaction, namely: complaints and suggestions system, customer satisfaction survey, stealth shopping, and analysis of the lost customers.

In order to see the customer perspectives on service quality, many researchers have proposed frameworks to measure the customer satisfaction level. Among these frameworks, SERVQUAL (Parasuraman et al., 1988) has been adopted to measure the quality of services in many fields.

SERVQUAL was used to observe and understand consumer perceptions and expectations. SERVQUAL has five dimensions, namely tangibility, reliability, responsiveness, assurance, and empathy

- Tangibility: physical appearance and attractiveness of the available features
- Reliability: ability to provide the consistently and accurate services.
- Responsiveness: willingness to help the customers and provide a prompt service
- Assurance: knowledge and politeness of employees, and their ability to evoke a sense of trust.
- Empathy: give attention to each of the customers.

In e-business, tangibility means that the visual appearance of the e-commerce site and its functions are working well. The designs and layouts that are created do not confuse visitors. The animations and images that are used should be straightforward for visitors in exploring the site. Reliability means that the site can do what it promised within the time it promised. One of the aspects in the dimension of responsiveness is the speed of the service. Visitors and Internet users in general do not enjoy visiting a site that requires a long loading time. Less than 10 percent of visitors will leave a website if the time needed to open a page is under 7 seconds, 30 percent when the loading time takes 8 seconds, and 70 percent when the loading time reaches 12 seconds (Cox and Dale, 2002). Assurance means that the e-commerce site can foster a sense of trust to its visitors. For example, the use of credit cards as one of the payment methods. The site owner must be able to convince the visitors that the credit card data is safe and there is no misuse of the data. Empathy means giving attention to each of the visitors. One of the examples that can be applied in this aspect is to create a website that can be customized by the visitors to fit their needs. The use of virtual assistance has also become one of the ways that could make visitors feel cared for and assisted.

SERVQUAL was originally used to measure the customer satisfaction levels of offline retail stores. Concerning the development of purchasing through online media, Parasuraman et al. (2005) developed a method of E-S-QUAL to measure the level of customer satisfaction for companies online. E-S-QUAL is used to measure the level of the service from the sites which users use to make online purchases. There are two

phases of data collection, which have different scales to understand the electronic service quality. The scale of the

basic E-S-QUAL which is being developed has 22 kinds of scales in four dimensions, namely efficiency, fulfillment, system availability, and privacy. The second scale is the E-RecS-QUAL, which is addressed for the users who do not visit the online site routinely. It consists of 11 kinds in three dimensions, namely responsiveness, compensation, and contact.

Another way to assess the quality of a website was made by Barnes and Vidgen (2000). They developed an instrument called the WebQual. WebQual is an instrument

used to assess the usefulness, information quality, and level of interaction services from Internet sites, especially those that offer e-commerce. There are five dimensions in the method of WebQual: Usability, Design, Empathy, Information, and Trust. Trust has been determined as a key factor. A variety of written works show that trust is related to customer satisfaction and that leads to consumer wants and then to an online transaction (Hidayanto et al., 2012; Luo, 2002; Udo, 2001). However, Parasuraman et al. (2005) said that the main purpose of WebQual was to evaluate the design quality of the site, making it less suitable for measuring the level of quality service.

The comparison of the dimensions used in measuring customer satisfaction can be seen in Table 1.

Table 1 - Comparison of some service quality measurement methods

Researcher	Method	Dimension
Parasuraman et al. (1988)	SERVQUAL	Tangibility, Reliability, Responsiveness, Assurance, Empathy
Parasuraman et al. (2005)	E-S-QUAL	Efficiency, Fulfillment, System Availability, Privacy, Responsiveness, Compensation, Contact
Barnes and Vidgen (2000)	WebQual	Usability, Design, Empathy, Information, Trust

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

Property Websites in Indonesia

The growth of property sectors in Indonesia are increasing each year and have been predicted to be improved continuously [2]. Based on the survey data from iProperty Group, it can be seen that Indonesian society is increasingly concerned about property ownership, both as a residence and as a long-term investment. There are several factors that have influenced it, such as good economic growth, rapid growth of the middle class society with purchasing power, and a stable inflation rate. Those factors have given a positive impact for the consistency of prices in the property sector in Indonesia.

Along with the growth of the property sector in Indonesia, property websites that offer information about properties being rented or sold are also growing significantly. Currently, there are some popular property websites in Indonesia, such as Rumah.com, Rumah123.com, PropertyKita.com, Century21.co.id, and UrbanIndo.com. Based on data analysis from Alexa.com, most of the property websites in Indonesia that have been visited are included in the top 200 websites, in terms of traffic rank in Indonesia. Some of them are Rumah.com (rank 160) and Rumah123.com (rank 173).

Research Methodology

Proposed Research Model

As previously mentioned before, this research aims to (1) measure the service quality of the property information provider sites in Indonesia and (2) determine the features which are desirable by the customers.

Related to the first research question that aims to measure the service quality of the property information provider websites in Indonesia, this research uses a SERVQUAL model developed by Parasuraman et al. (1988). However, the model of SERVQUAL is too general, so it needs to be modified with context pertaining to the object that will be researched. Therefore, we combine SERVQUAL with the modification of website quality factors developed by Cox and Dale (2002). From the 12 aspects of web quality, there are some aspects that are not used in this study because of the discrepancy with the property website characteristics. These aspects are the confirmation of the booking and purchase of the product. In regards to property, there is no product booking, so we modified it to the submission of the product information. The eleven qualities of the websites that we have selected have also been mapped into the dimensions of the SERVQUAL as can be seen in Figure 1.

[2] http://www.tempo.co/read/news/2013/02/12/090460855/2013-Pasar-Properti-Diperkirakan-Makin-Melejit

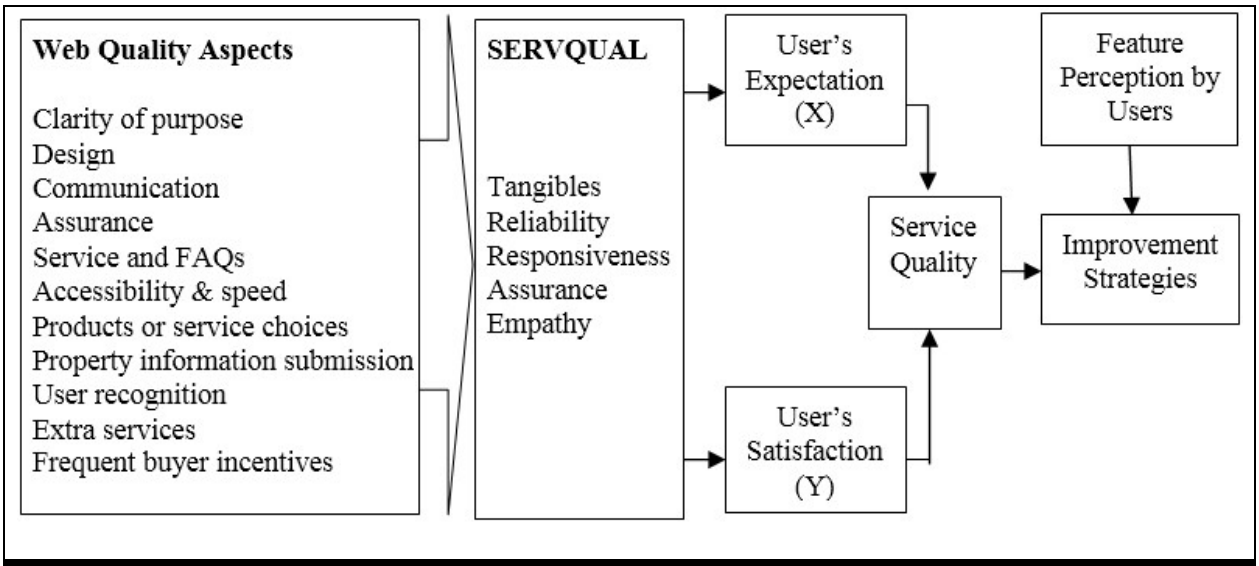

Figure 1 - Research Model

Based on Figure 1, there are two variables measured in this study regarding service quality of property websites. The first variable (X) is the expectation of respondents to property websites in Indonesia. The second variable (Y) is the satisfaction of the respondents with respect to the performance of the property websites in Indonesia. As we explained in the background, property information provider websites in Indonesia are still not providing features and services that give added-value for consumers. In addition, most of the information presented in the websites is not complete or accurate, even very basic information such as specifications, facilities of the property, location of the property, and so on. This is mainly due to the absence of an approval mechanism applied by property information provider websites, in where users can enter any information, even though the information entered is not clear. In light of this, we developed five hypotheses in accordance to the SERVQUAL dimensions, which are outlined as follow:

H1: The property information provider websites in Indonesia are not providing reliable services.

H2: The property information provider websites in Indonesia are not giving enough assurance to their visitors.

H3: The property information provider websites in Indonesia are not well-designed.

H4: The property information provider websites in Indonesia are not empathetic enough to their visitors.

H5: The property information provider websites in Indonesia are not responsive enough to visitors' requests.

Related to the second question that aims to determine the features which are needed by the property information provider websites, we did a study of the features from the property websites in Indonesia and outside Indonesia, such as trulia.com, Rumah.com, Rumah123.com, PropertyKita.com, and Century21.co.id. From the compiled results, we managed to identify 39 features that we assume could represent all of the features from the property websites, such as general information, location map, photos, videos, etc.

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

Instrument Development

In order to test our hypothesis, we developed a questionnaire which is comprised of two parts. The first part contains questions regarding the assessment of property websites service quality. We adopted the mechanism from Iwaarden et al. (2003) who have studied the application of SERVQUAL on websites. Each question was measured by using the five-points of the Likert scale. To measure the expectations of the visitors, the Likert scale was represented by using the words "Not Very Important" to "Very Important". To measure the visitor's perception on service quality, Likert scale was represented by the words, "Very Dissatisfied" to "Very Satisfied".

In the second part of the questionnaire, we listed all thirty nine features that we had compiled, and asked the importance of each feature to the respondents. We measured the importance of these features by using the Important-Rating Task (Sethuraman et al., 2005), which is also widely used to determine the attributes of service quality that are considered important factors by the users. The respondents were asked to rate the importance of each feature by using the five-points of Likert scale, where number 1 indicates that the feature is considered "Not Very Important", and the number 5 indicates that the feature is considered "Very Important". The use of importance-rating task is considered as the easiest mechanism, because respondents can simply declare the importance of each feature.

The details about the instruments used in this study are available in appendices A and B.

Population, Sample and Data Collection Procedure

The population of this study was the users of the property information provider websites. Visitors use the website to sell their property, as well as for seeking property to rent or buy. At first, we contacted several owners and administrators of property information provider websites in Indonesia, to place the questionnaire that we developed on their website. Unfortunately, none of them gave us permission. Finally, we decided to visit the largest property exhibition in Jakarta directly. The exhibition was held for a week and was attended by many developers who sold a variety of property products such as houses, apartments and offices. The exhibition visitors came from various regions in Indonesia, due to the amount of discounts given by the developers during the exhibition. The visitors of course, most of those who were already working and looking for information about properties that they wanted to buy, could find information there. Visitors can range from a young family looking for their first home, to a family who has settled and is now looking for a new and better home, to office workers seeking office information for sale/rent, as well as those just looking for property information. To simplify the data collection, we used accidental sampling to get our respondents. We came to visitors directly and asked if they had ever used property information provider websites. If they had used the website at least once, we asked for their willingness to fill out the questionnaire. Participation was voluntary, so participants could refuse to fill out the questionnaire.

Results

Profile of Respondents

We distributed questionnaires to 204 respondents and only 101 respondents answered all questions (thus we consider only 101 valid questionnaires to be processed). Our respondents came from a variety of areas but were dominated by Jakarta with (33%) followed by Depok (22%), Bekasi (11%), and the rest were from Bandung, Batam, Bogor, Boyolali, Denpasar, Makassar, Malang, Pontianak, Surabaya, Surakata, Tangerang, Wonogiri, and Yogyakarta. In terms of age, our respondents' ages were between 26-30 (44%), 21-25 (26%), and the rest above 31 years old. In addition, 83% of our respondents held a bachelor's and/or

master's degree. Table 2 summarizes the demographics of our respondents.

Validity and Reliability Testing of the Instrument

One of our aims in this research is to develop a framework for measuring the service quality of e-commerce websites and extracting important information related features for property websites. The measurement model was validated by measuring internal validity and reliability. The internal reliability was measured by using Cronbach's alpha which is a well-known formula to measure the internal reliability of the research instrument (Saleh and Ryan, 1991). We used the SPSS tool to calculate such values. If Cronbach's alpha ratios exceed 0.7, it meant the questionnaire was reliable (Van Dyke and Kappelman, 1997). As summarized in Table 3, the Cronbach's alpha ratios in all SERVQUAL dimensions for both expectation and perception were greater than 0.7. The same result was also found in the questionnaire for identifying important features of property websites, it showed Cronbach's alpha value of 0.953 which was greater than 0.7 for all 39 items we used in this research. Hence, our questionnaire was considered consistent internally.

Table 2 - Respondents' Demographics

Sex		Job	
Male	63%	Government officer	14%
Female	37%	Private company employee	56%
Age		Student	9%
< 21	3%	Enterpreneur	8%
21-25	26%	Others	13%
26-30	44%	Income (rupiah)	
31-35	17%	< 1 million	8%
> 36	10%	1 – 2 millions	9%
Education level		2 – 3 millions	23%
High school	10%	> 3 million	60%
Diploma	8%	Location	
Bachelor	61%	Jakarta and its greater area	80%
Master	21%	Others	20%
Frequency of accessing property website		Media of internet access	
Very often	5%	PC	52%
Often	14%	Notebook	77%
Sometimes	20%	Tablet	14%
Rarely	61%	Handphone	26%
		Smartphone	43%
		Others	4%

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

Table 3 - The reliability test result of SERVQUAL dimensions

SERVQUAL dimensions	Cronbach's Alpha ratio	
	Expectation	Perception
Reliability	0.876	0.902
Assurance	0.785	0.858
Tangibility	0.829	0.908
Empathy	0.765	0.880
Responsiveness	0.823	0.883

In addition, we also measured the validity of our questionnaire. Based on the validity tests of our questionnaire, it was found that the value of CI-CT (r count) was greater than the r table value of 0.1956 in df = 99 (101-2) for all variables in our questionnaire. Hence, we also concluded that our instrument was valid.

Property Information Provider Websites Quality According to SERVQUAL Dimensions

This section describes the results of the hypotheses testing we have done. Table 4 shows a summary of the results of the statistical tests on the five SERVQUAL dimensions to measure the service quality of property websites in Indonesia, which are reliability, assurance, tangibility, empathy, and responsiveness.

Regarding the importance of the service level, among the five dimensions, reliability is considered the most important dimension, followed by responsiveness, assurance and finally tangibility. This shows that most respondents are seeking speed when accessing the property websites. Empathy is the dimension that is considered less important than the other dimensions.

Seen from the respondents' perceptions of property website service quality, reliability is also considered the most satisfying dimension among other the four dimensions followed by assurance, tangibility, responsiveness and empathy. This means that most of the property websites in Indonesia can be accessed at any time and provide reliable connections. It is supported by the respondents' demographics which showed that most of them reside in Jakarta and the greater part of Jakarta, which of course has a good Internet connection. In addition, reliability means that the websites can do what they promise and provide services that are consistent and accurate. By considering this, it can be said that the property websites in Indonesia have given fairly complete property information. It also explains why the respondents consider the reliability the most satisfying dimension.

We formulated the hypothesis 1 through 5 to assess the service quality of property websites in Indonesia. Related to this, we measured how respondents perceived property website service quality compared to their expectations. In the SERVQUAL model, service quality is obtained by looking at the difference between expectations and satisfaction of users. The negative gap score indicates that the satisfaction on the corresponding dimension does not meet with the users' expectation. If we look at the gap score, responsiveness has the highest gap among the other dimensions. As we explained, most of the respondents feel that the website owners tend to have a slow response or at times even be ignored by the owner when they ask something. It explains why most of the respondents feel that the website owners are unresponsive.

Table 4 - Scores of SERVQUAL dimensions

Dimension		N	Mean	SD	Gap (P-E)	T value	Result *
H1: Reliability	Perception	101	3.201	0.904	-1.137	-9.501	H0 rejected
	Expectation	101	4.338	0.793			
H2: Assurance	Perception	101	3.134	0.741	-0.916	-7.880	H0 rejected
	Expectation	101	4.050	0.904			
H3: Tangibility	Perception	101	3.133	0.842	-0.918	-7.316	H0 rejected
	Expectation	101	4.050	0.938			
H4: Empathy	Perception	101	3.098	0.794	-0.876	-7.516	H0 rejected
	Expectation	101	3.973	0.860			
H5: Responsiveness	Perception	101	3.129	0.890	-1.161	-10.065	H0 rejected
	Expectation	101	4.290	0.743			

* We used level of significance 0.05, with minimum value of T table 1.96

In addition, we also did a paired sample t-test to see whether the gap is significant or not. We used 0.05 as the level of significance to draw the conclusion. As can be seen in Table 4, the scores for all hypotheses reflect significant differences, which are shown by all H0s being rejected. In other words, they indicated that there were significant differences between expectation and perceived satisfaction in terms of reliability, assurance, tangibility, empathy, and resposiveness. Thus we concluded that all hypotheses are accepted significantly.

Table 5 - Top five factors with the highest and lowest expectation score

Service Quality Factors	Expectation mean	Service Quality Factors	Expectation mean
Status of the property is clear, whether it is still available for sale/lease/contract or already sold.	4.62	Website and information can be organized in accordance with the user needs.	3.51
Website can be accessed quickly	4.60	The page does not overly extend downward.	3.65
Detailed information of property price is available	4.58	Privacy policy is accessible	3.71
Detailed information of property characteristics is available	4.52	Security policy is accessible	3.74
Website can be accessed at any time	4.49	There is a platform/media for sharing information between users	3.78

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

One thing that is also worth a look is the perception of service quality on the item-level, considering that our SERVQUAL model was constructed by adapting web quality factors. Table 5 shows the top five factors with the highest and lowest expectation scores of service quality. This resembles factors which are considered important and not important in the users' point of view of property websites. According to Table 5, it can be seen that the factors regarding property information dominate the top five of the highest expectation scores, such as "Status of the property is clear, whether it is still available for sale/lease/contract or already sold" which is placed in the first rank and is considered as the most important factor. This shows that visitors do not want to spend time with fictitious information. Visitors of property websites also want information about the property in detail and not only its basic information such as location and phone number of the seller, but also information about the characteristics and price of the property.

Assurance and design aspects dominate the top five factors with the lowest expectation scores, given by the respondents. Visitors of the property websites in Indonesia prioritize more on property information rather than design and assurance offered by the website. Privacy and security policies are also considered to be unimportant aspects due to the absence of a transaction or exchange of data within the website. Visitors who are just looking for property information do not even need to register in order to see the information. Financial transactions such as online payments are also still rarely adopted in property websites, thus it explains why users do not consider these as important aspects. However, all aspects we tested are considered important as average rating of each feature is above 3.51.

Table 6 - Top five factors with the highest and lowest perception score

Service Quality Factors	Satisfaction Mean	Service Quality Factors	Satisfaction Mean
The website can be accessed at any time	3.50	Questions or complaints can be resolved within 24 hours	2.75
The website offers options for new or already registered user. New users are given the option to register, while registered users are provided a login form.	3.40	Users get information on progress/ changes/offers contained in the website	2.92
The website can be explored and navigated easily and is not confusing	3.38	Users do not need to do a lot of "clicks" to get some information	2.94
The registration process is easy and simple	3.36	Animations contained in the website do not disturb or make users feel uncomfortable when finding or reading information	2.95
The intent and purpose of the website is clear, either as provider of information or to give the opportunity for the users to contribute information in it	3.34	It is easy to print information from the website	2.98

Table 6 shows the top five factors with the highest and lowest satisfaction scores of service quality. It can be seen that among all factors examined in this study, the speed of accessing website is ranked first as the most satisfying factor. Respondents also feel at ease and see the convenience when exploring and navigating through the website, whilst factors that are considered the most unsatisfactory are the willingness of the owner of the website to answer any questions or complaints. The property status changes are also not shown, so that respondents are not aware of the changes that occur.

Important Features of Property Information Provider Website

Most of the property websites in Indonesia are still adopting minimal features in their websites. On the contrary, many famous property websites such as trulia.com have utilized more advanced features such as videos in their website. However, according to our results, most of the respondents consider such advanced features not as important as can be seen in Table 7. This is due to unsatisfactory Internet infrastructure to access such advanced features.

Table 7 - Top ten expected features on property information provider websites in Indonesia

Features	Mean	Features	Mean
Detailed information about the property such as land and building area, number of rooms, etc.	4.52	Personal information of seller such as name, telephone, email, etc.	4.14
Property location map	4.51	Catalog of properties	4.11
Property photos	4.49	Search engine for searching properties based on particular criteria	4.08
Facilities near property such as school, hospital, market, etc.	4.34	Catalog of property agents/sellers	4.02
Direction to property location	4.29	Catalog of property developers	4.02

Table 8 - Compliance of the most expected features to the most popular property information provider websites in Indonesia

Features	A	B	C	D
Detailed information about the property such as land and building area, number of rooms, etc.	√	√	√	√
Property location map	√			√
Property photos	√	√	√	√
Facilities near property such as school, hospital, market, etc.				√
Direction to property location				
Personal information of seller such as name, telephone, email, etc.	√	√	√	√
Catalog of properties	√	√	√	√
Search engine for searching properties based on particular criteria	√	√	√	√
Catalog of property agents/sellers	√	√	√	√
Catalog of property developers			√	

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

The comprehensive and complete property information page is the most wanted feature. Additional information such as photos, maps, driving directions, catalog list, etc. could be accessed by visitors themselves without contacting the property agent. The common features on most property websites are the map (location) of the property, direction information from the visitor's location to the property and also a catalog from the property developers. However the expected feature that respondents want is to get an exact location of the property and not just a street name or even the name of the area only.

Discussions

According to the Chairman of REI (Real Estate Indonesia), Setyo Maharso, national property sector in 2011 experienced a reasonable growth and will continue to grow in 2012. One of the property websites in Indonesia, PropertyKita.com, states that the number of its visitors in 2011 increased 400% over the previous year. This means the property websites in Indonesia have been considered as one of the main forms of media to seek property information. In addition, in 2011, several property websites were acquired by foreign parties such as Rumah.com that was acquired by AllPropertyMedia and Rumah123.com that was acquired by IPGA Ltd. This indicates that the property websites have a good future in Indonesia.

In order to satisfy their visitors, property websites in Indonesia must continue to be innovative and develop their websites. Website service qualities are proven to give positive impacts to the users' satisfaction according to the written works of (Bai et al., 2008; Gera, 2011; Hua et al., 2009; Saraei and Amini, 2012). Based on our results, there are gaps between expectations and satisfaction for visitors of the property websites in Indonesia in all SERVQUAL dimensions. This means that visitors have higher expectations than the performance of the property websites. Property website developers need to evaluate and benchmark the websites to the reputable ones in the world, so as to have a better development plan in the future.

Considering the most important features according to the respondents, detailed information about the property is the cornerstone of the property websites, as shown in Table 7. A clear status of the property is necessary in order for the visitors not to waste their time reading about properties that are currently unavailable. Informativeness is proven in many research results to be one of the main determinants for user satisfaction in e-commerce websites (Chung and Shin, 2010; DeLone and McLean, 2004; Kim et al., 2003; Lin, 2007; Lin and Sun, 2009; Shukla et al., 2010). To improve the informativeness of property websites in Indonesia, the developers can improve related features in their website design as the respondents already expect. Property information can be presented in a variety of categories, for example based on property prices, property developers, property agents, and so forth. Important information that should also be given by the property websites is the information of the property sellers. Name, phone number, email, and other important information must be listed clearly, so that website visitors can figure out who to call.

In addition to detailed information about the property and the seller, other supporting information is also needed by the users, such as public facilities that are closest to the location of the property. Some property websites in Indonesia are already implementing this supporting information. Century21.co.id for example, it already displays public facilities. However, information presented on this website can not be trusted, since visitors can freely fill property information without the need for approval from the website owner/moderator. This can lead to high expectations that will not be matched in reality, thus could lower the trust of visitors to the website. In many written works, trust is also considered as one of the important determinants for users to come back, purchase, or re-purchase in e-

commerce websites (Belanger et al., 2002; Hidayanto et al., 2012; Salisbury et al., 2001).

Another way to provide supporting information in the property websites is to utilize the data provided by other parties. PropertyKita.com for example, provides supporting information taken from Foursquare. It provides information about restaurants, entertainment venues, and shops which are located nearby the property. Moreover, property websites can also utilize the data directory in Indonesia, among others are Urbanesia and Yahoo!Koprol. These sites provide a platform that can be used by other parties to use their data. Property website owners can establish cooperation with these sites to provide more comprehensive and complete information, so that visitors do not need to contact or find out by themselves the nearest public facilities of the property.

With a lot of property information in a website, the website developers must provide a search engine. The search engine should not just be based on a single keyword, but could be based on many keywords. With a search engine that provides a variety of options, visitors can directly search for a property in accordance with their own criteria.

According to the results released by Rumah123.com, the main reason for visitors to visit the property website is to buy or rent property. Other reasons include, visitors looking for information about mortgages, news about the property, and free consultations. If features for discussion or interaction among visitors are developed more seriously, the property websites may increase the number of their visitors, not only visitors who are looking for property, but also other visitors who want to give their comments about the property. Indonesian people are known to be social people who love to chat. The website owners can provide review features which enables visitors to leave comments on various things such as environmental conditions of the property. It is very useful for other visitors who do not yet know exactly the environmental conditions of the property that is being sought.

The website property owners also should consider the development of a mobile environment for their websites. Many Internet users in Indonesia are accessing Internet via mobile devices. The latest data from the Association of Indonesian Cellular Telecommunications shows that the number of cellular subscribers in Indonesia as of the year 2011 has reached more than 240 million subscribers. This number is close to the population of Indonesia, amounting to 258 million people in December 2010. The property website owners will loose many opportunities if they do provide a mobile version of their websites. In light of this, some features can be added, for example, by utilizing GPS capabilities available in some mobile devices. GPS capabilities can be used to direct visitors to the property location.

Notifications also need to be provided by the property website developers. The visitors do not always have spare time to search property information. Website developers can create a notification and send it to the visitors each time a new property information is added to the website.

Most property sellers also put up signs at the location of the property they sell. Some local brands have been utilizing quick response (QR) codes in their ads. This is an interesting opportunity that is worth a try by property website developers. Property websites can provide the QR code that can be used by sellers to be listed on the advertising board. With the QR code, someone who crosses the property's location can scan the QR code and automatically be directed to the property information page on the website. One can immediately find out detailed information about those properties without having to contact the seller.

One of the interesting findings is that users tend not to think of video as a critical form of information. Even with the medium level of Internet quality among other countries, the

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

respondents did not want to have bandwidth-intensive features such as video. This result confirms the importance of the website design, the website owner or seller of the product should not focus on developing features that consume bandwidth resources in designing a website, especially for a website that emphasizes on providing information. Information in the form of textual or image is considered sufficient for the users, as long as the information provided is complete. This finding surely can be generalized for other developing countries which have limited Internet infrastructure. However, the results may be different when applied in developed countries where Internet quality is already very good.

Conclusions

This research aims to assess the service quality of property websites in Indonesia and their important features. The results of this study showed that the satisfaction of the respondents to the property websites in Indonesia is still lower than their expectations, which means that there are service quality gaps. Among all aspects we examined, we found that there are five aspects which have the highest gap, namely: questions or complaints which could be resolved within 24 hours, the clarity of the property status whether it has been sold or not, the availability of detailed information about property characteristics, the ability to access the site quickly, and the availability of detailed information of property prices. In addition, the results of our analysis according to SERVQUAL dimensions showed that the responsiveness dimension has the highest gap. In terms of important features according to respondents' perception, we found that most of the property websites in Indonesia are missing the implementation of some important features such as information about public facilities near property location, the location maps, property developers' catalogs, and directions to the property location. Therefore, the website developers should be able to provide clear and complete property information, including information related to the property and the seller as well. Web developers shall not focus in implementing bandwidth-consuming features such as video when developing e-commerce website in developing countries, as most users are not considering them as important features they want.

Study Limitations

The results of this research must be taken in light of some limitations. In this research, website quality factors were mainly adopted from Cox and Dale (2002). There were many other researchers proposing a variety of factors to assess the quality of the website. Although the framework we developed had been validated by 3 academicians, more in-depth study is still needed so that we can obtain more comprehensive website quality factors. The website service quality framework we developed can also be extended to assess the quality of services of other websites, not limited to the service quality of property website. The framework can also be applied to websites that have similar characteristics in social commerce that provides a place for consumers to sell their products/services. Adjustments need to be made to our instrument, especially to replace the property context with the context of the website being evaluated. To assess the service quality of the website in general, other researchers that will adopt our framework need to adjust the "property information submission" aspect.

Regarding the 39 features of the property website tested in this study, the features were obtained by compiling various well known property website features. There might be other important features that have not been included in these 39 features. To further improve the completeness of the features tested, it is necessary to have in-depth interviews with the property website users and incorporated the results to the existing property website features that we have studied.

Results of this study related to the service quality of property only apply to the websites in Indonesia. The respondents of this study can be considered fairly representative of the demographics of the population in Indonesia. In terms of education, for example, our respondents had various levels of education. Similarly, the gender distribution is not dominated by a particular sex. However, in terms of the location of the respondents' homes, the majority of respondents came from the Jakarta region. External validity can be improved by distributing questionnaires to various regions in Indonesia so that we can represent the respondents from the rural areas.

The research was conducted only in Indonesia, which has a web index of 34 out of 61 countries, and ranks 24 for its readiness index, one of its indicators is related to infrastructure readiness. The index shows that Indonesia is still at the medium level for the quality of its Internet infrastructure. To increase ecological validity, this research could be tested in other countries that have low or/and high Internet infrastructure quality. The results of these studies can be compared with the findings in this study, so that a more comprehensive view of the service quality and features that are considered important in a property website, can be obtained.

The website service quality is contextual, depending on the object being observed. In fact, website service quality may also be different in other fields, even if done in Indonesia. Nevertheless, in general, the results of this study are consistent with the results of other studies, where users tend to have higher expectations than the satisfaction they feel in the end (Iwaarden et al., 2003; Pakdil and Aydin, 2007; Saraei and Amini, 2012). Ecological validity can also be increased by performing experiments in other website categories, should we want to generalize the results for other e-commerce websites.

References

Bai, B., Law, R., and Wen, I. (2008). “The impact of website quality on customer satisfaction and purchase intentions: Evidence from Chinese online visitors,” *International Journal of Hospitality Management*, 27(3), pp. 391-402.

Bardhan, A. S., Jaffee, D., and Kroll, C. (2000). “The Internet, E-Commerce, and the Real Estate Industry,” Fisher Center for Real Estate and Urban Economics, University of California, Berkeley, Retrieved from http://escholarship.org/uc/item/7jx4b9sb on April 27, 2013.

Barnes, S. J. and Vidgen, R. (2000). “WebQual: an exploration of Web site quality,” *Proceedings of European Conference in Information Systems*, Vienna.

Chaffey, D. (2007). *E-Business and E-Commerce Management (Third Edition)*. Essex: Pearson Education Limited.

Chang, H. H. and Chen, S. W. (2009). “Consumer perception of interface quality, security, and loyalty in electronic commerce,” *Information & Management*, Vol. 46(7), pp. 411-417.

Chung, K-H. and Shin, J-J. (2010). "The antecedents and consequents of relationship quality in internet shopping," *Asia Pacific Journal of Marketing and Logistics*, 22(4), pp.473–491.

Cox, J. and Dale, B. G. (2002). “Key Quality Factors in Web Site Design and Use: an Examination,” *International Journal of Quality & Reliability Management*, 19(7), pp. 862-888.

DeLone, W. H. and McLean, E. R. (1992). “Information systems success: The quest for the dependent variable,” *Information Systems Research*, 3(1), pp. 60-95.

DeLone, W. H. and McLean, E. R. (2003). “The DeLone and McLean Model of Information Systems Success: A Ten-Year Update,” *Journal of*

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

Management Information Systems, 19(4), pp. 9-30.

DeLone, W. H. and McLean, E. R. (2004). "Measuring e-Commerce Success: Applying the DeLone & McLean Information Systems Success Model," *International Journal of Electronic Commerce*, 9(1), pp. 31 – 47.

Dragulanescu, N. and Niculescu, C. (2000). *Quality Management (in Romanian)*. Niculescu Publishing House: Bucharest/Romania.

Gera, R. (2011). "Investigating the link between service quality, value, satisfaction and behavioural intentions in a public sector bank in India," *International Journal of Services, Economics and Management*, 3(1), pp. 3–20.

Hernández, B., Jiménez, J., Martín, M. J. (2009). "Key website factors in e-business strategy," *International Journal of Information Management*, 29(5), pp. 362-371.

Hidayanto, A. N., Saifulhaq, H., and Handayani, P. W. (2012). "Do Consumers Really Care on Risks in Online Shopping? An Analysis from Indonesian Online Consumers," Proceedings of *IEEE 6th International Conference on Management of Innovation and Technology*, Bali.

Hidayanto, A. N., Adha, M. S., Jiwanggi, M. A., and Melia, T. (2012). "A Study of Impact of Search Engine Optimization to Internet Marketing Strategy," *International Journal of Services, Economics and Management*, 4(4), pp. 298-316.

Hua, H-H., Kandampully, J. and Juwaheer, T. D. (2009). "Relationships and impacts of service quality, perceived value, customer satisfaction, and image: an empirical study," *The Service Industries Journal*, 29(1), pp.111-125.

Iwaarden, J., Wiele, T, Ball, L., and Millen, R. (2003). "New Research Applying SERVQUAL to Websites: an exploratory study," *International Journal of Quality & Reliability Management*, 20(8), pp. 919-935.

Jennex, M. E., Amoroso, D., and Adelakun, O. (2004). "E-commerce infrastructure success factors for small companies in developing economies," *Electronic Commerce Research*, 4(3), pp. 263-286.

Kim, S. E., Shaw, T. and Schneider, H. (2003). "Web site design benchmarking within industry groups," *Internet Research: Electronic Networking Applications and Policy*, 13(1), pp 17-26.

Kim, S. and Stoel, L. (2004). "Apparel retailers: website quality dimensions and satisfaction," *Journal of Retailing and Consumer Services*, 11(2), pp. 109-117.

Kotler, P. (2002). *Marketing Management (11th edition)*. Prentice Hall.

Kuan, H-H., Bock, G-W. and Vathanophas, V. (2008). "Comparing the effects of website quality on customer initial purchase and continued purchase at e-commerce websites," *Behaviour & Information Technology*, 27(1), pp. 3-16.

Lee, Y. and Kozar, K. A. (2006). "Investigating the effect of website quality on e-business success: An analytic hierarchy process (AHP) approach," *Decision Support Systems*, 42(3), pp. 1383-1401.

Lin, G. T. R. and Sun, C-C. (2009). "Factors influencing satisfaction and loyalty in online shopping: an integrated model," *Online Information Review*, 33(3), pp. 458-475.

Lin, H-F. (2007). "The Impact of Website Quality Dimensions on Customer Satisfaction in the B2C E-commerce Context," *Total Quality Management & Business Excellence*, 18(4), pp. 363-378.

Lin, H-F. (2010). "An application of fuzzy AHP for evaluating course website quality," *Computers & Education*, 54(4), pp. 877-888.

Liu, C. and Arnett, K. P. (2000). "Exploring the factors associated with Web site

success in the context of electronic commerce", *Information & Management*, 38(1), pp. 23-33.

Loiacono, E. T., Watson, R. T. and Goodhue, D. L. (2002). "WEBQUAL: A Measure of Website Quality," *Marketing Theory and Applications*, Vol 13. K. K. Evans and L. K. Scheer (eds.). American Marketing Association. Chicago. pp. 432-439.

Luo, X. (2002). "Trust Production and Privacy Concerns on the Internet A Framework Based on Relationship Marketing and Social Exchange Theory," *Industrial Marketing Management*, 31(2), pp. 111-118.

Mostaghel, R. (2006). *Customer Satisfaction: Service Quality in Online Purchasing in Iran*. Unpublished Master Thesis. Luleå University of Technology, Iran.

Nedelman, A. G. (1999). "E-Commerce and Real Estate: A Phantom Menace?," *The Los Angeles Business Journal*, Retrieved from http://www.securitization.net/pdf/EcommerceArticle.pdf on April 27, 2013.

Pakdil, F. and Aydin, O. (2007). "Expectations and perceptions in airline services: An analysis using weighted SERVQUAL scores," *Journal of Air Transport Management*, 13(4), pp. 229–237.

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. (1988). "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality," *Journal of Retailing*, 64(1).

Parasuraman, A., Zeithaml, V. A., and Malhotra, A. (2005). "E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality," *Journal of Service Research*, 7(3), pp. 213-233.

Saleh, F. and Ryan, C. (1991). "Analyzing service quality in the hospitality industry using the SERVQUAL model," *The Service Industries Journal*, 11(3), pp 324–343.

Salisbury, W. D., Pearson, R. A., Pearson, A. W., and Miller, D. W. (2001). "Perceived security and World Wide Web purchase intention," *Industrial Management & Data Systems*, Vol. 101, No. 4, pp 165-177.

Saraei, S. and Amini, A. M. (2012). "A study of service quality in rural ICT renters of Iran by SERVQUAL," *Telecommunications Policy*, 36(7), pp. 571–578.

Sethuraman, R., Kerin, R.A., and Cron, W. L. (2005). "A field study comparing online and offline data collection methods for identifying product attribute preferences using conjoint analysis," *Journal of Business Research*, 58(5), pp. 602-610.

Shukla, A., Sharma, N. K., and Swami, S. (2010). "Website characteristics, user characteristics and purchase intention: mediating role of website satisfaction," *International Journal of Internet Marketing and Advertising*, 6(20),pp. 142-167.

Udo, G. J. (2001). "Privacy and Security Concerns as Major Barriers for Ecommerce: a Survey Study," *Information Management & Computer Security*, 9(4), pp. 165-174.

Webb, H. W. and Webb, L. A. (2004). "SiteQual: an integrated measure of Web site quality," *Journal of Enterprise Information Management*, 17(6), pp. 430 - 440.

Wells, J. D, Valacich, J. S., and Hess T. J. (2011). "What Signal Are You Sending? How Website Quality Influences Perceptions of Product Quality and Purchase Intentions?," *MIS Quarterly*, 35(2), pp. 373-396.

Acknowledgement

We would like to thank IMHERE project officers for their support in disseminating the results of this research. The IMHERE project is fully supported by Directorate General of Higher Education, Ministry of National Education, in the Republic of Indonesia. It is a pleasure to convey our gratitude to our government for their continuous support in our research development. We also would like to thank Lea Galindo for her outstanding editing and proof reading.

DOI: 10.17705/1pais.05301

Appendixes

Appendix A. Indicators of SERVQUAL Dimensions

Website Quality Aspects	**Indicators**
TANGIBILITY	
Clarity of purpose	The intent and purpose of the website is clear. The website has positioned itself as a one-way information provider website and allows visitors to contribute information.
	The website can be explored easily and is not confusing.
	Instructions/guidelines for use are provided at the website home page, so that visitors are not confused in using the website.
Communication	The information fits in the website page, so that users won't have to scroll the page up or down too often because of too much information that extends down the page.
	The use of color and images is consistent, relevant, and clear.
	Animations contained in the website do not disturb or make users feel uncomfortable when reading or finding information.
Design	The number and variety of links are useful for users, and do not confuse them.
	The menus and navigations are uniform and consistent in the same position on every page of the website.
	The information is presented on one page without requiring users to move to another page for more detailed information, i.e. users will rarely move to a new page or pop-up window.
	Users do not need to do a lot of "clicks" to get information.
	The search engine provides various options according to the categories of information on the website. Search results can also be sorted by multiple criteria.
	The form has a clear explanation on every point that must be filled by the users. The system will display an error message when users make a mistake in filling the form.
EMPATHY	
Design	It is easy to print a page of information from the website.
	Navigation, home button, back/forward menus are available on every page.
Extra services	The website provides a platform for sharing information between users.
	There are links to pages that have similar information, such as information about other properties with similar characteristics.

	The website provides search engines for finding information from similar websites.
	The website and information can be set according to the user's interests.
	The website provides pointers to the location of each property.
Frequent buyer incentives	Users get information about progress/changes/offers of property contained in the website.
	The website provides a variety of packages to submit property information at more affordable prices.
ASSURANCE	
Assurance	The security policy can be accessed.
	The privacy policy can be accessed.
	The website provides information about the company's profile.
	The reputation and image of the company are good.
Accessibility & speed	The information is available when the users open the page.
RESPONSIVENESS	
Accessibility & speed	The website can be accessed at any time.
	The website can be accessed quickly.
	The images and animation do not affect the use of the website, for example causing the website to be slow.
Service and Frequently Asked Questions	The website provides email address or contact information for submission of questions or complaints.
	Questions or complaints can be resolved within 24 hours.
	Advice and input from the user are used as a benchmark for measuring user satisfaction.
	The information of services is presented in the form of frequently asked questions and answers.
	Frequently asked questions provide links to relevant pages based on questions and answers that were discussed.
RELIABILITY	
Products or service choices	There is detailed information of property characteristics.
	There is detailed information for the property price.
	The property status is clear, whether it is still available for sale/lease or has already been sold.
Property information submission	The cost of the advertised property information is clearly defined.
	The option and payment procedures are clearly defined, if it is not free.
	The information regarding the terms and conditions of services are available and accessible.
User recognition	The registration process is easy and simple.

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301

	The registration data is stored so that users do not need to re-enter the data. For example when a user wants to subscribe to property information, the user does not need to enter his/her email address anymore, but simply push the button to subscribe.
	The website offers different options for a new or already registered user. New users are given the option to register, while registered users are supplied with a login form.

Appendix B. Indicators of Expected Property Information Provider Website Features

Code	Indicators
Z1	Detailed information about the property, such as land and building areas, number of rooms, etc.
Z2	Property location map.
Z3	Direction to property location.
Z4	Facilities near property such as school, hospital, market, etc
Z5	Property photos.
Z6	Property videos.
Z7	Review of properties from visitors
Z8	Review of environment surrounding the property
Z9	Print property information
Z10	Save property information, so that it can be used another day
Z11	Notification of property changes
Z12	Share property information to social network websites
Z13	Report on data errors/fake information
Z14	Information of other properties nearby
Z15	Link/information of other properties with similar characteristics to property being observed
Z16	List of new properties
Z17	List of properties with changing prices
Z18	List of properties that held open house events.
Z19	Comparison of properties based on certain criteria
Z20	Mortgage calculator
Z21	Personal information of sellers such as name, telephone, email, etc.
Z22	Mobile version of website
Z23	Applications for smartphones
Z24	Search engine for searching properties based on particular criteria
Z25	Article and tips about property
Z26	Questions & Answers
Z27	Visitor blog
Z28	Points and rewards based on participation level in the website

Z29	Account for visitors for their personalization
Z30	Testimonial for visitors, properties, agents, or sellers
Z31	Frequently Asked Questions (FAQ) regarding the use of the website
Z32	Widgets that can be installed on the seller website containing information about
Z33	Badge that can be posted on the visitor's website. This badge contains some personal data of visitors, such as name, current activity, blog, any FAQ ever created, and so on.
Z34	Blog that contains the latest information regarding the development of properties
Z35	Facility for negotiating property price
Z36	Site-map of the website
Z37	Catalog of properties
Z38	Catalog of developers
Z39	Catalog of property agents/sellers

About Authors

Dr. Achmad Nizar Hidayanto is Head of Information Systems/Information Technology Stream, Faculty of Computer Science, Universitas Indonesia. He received his PhD in Computer Science from Universitas Indonesia. His research interests are related to information systems/information technology, e-learning, e-commerce, information systems security, change management, distributed systems and information retrieval.

Widianto Muttaqien Mukhodim, M.T.I graduated from Master of Information Technology, Faculty of Computer Science, Universitas Indonesia. His research interests are related to e-commerce and information technology. Currently, he is working as a consultant in a private company.

Frisca, M. Kom received her master's degree in Computer Science from Faculty of Computer Science, Universitas Indonesia. Her research interests are related to e-learning and knowledge management. Currently, she is working as a business development analyst in a private company.

Kasiyah M. Junus, M.Sc is a lecturer at the Faculty of Computer Science, Universitas Indonesia. She obtained her master degree in Computer Science from University of Western Ontario, Canada in 1991. Her research interests are related to mathematics, e-commerce, instructional design, and e-learning.

https://aisel.aisnet.org/pajais/vol5/iss3/2
DOI: 10.17705/1pais.05301